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## Background

- School-entry vaccination mandates have been widely as a mechanism to ensure high immunization coverage rates <sup>1</sup>
- In August 2018, Puerto Rico (PR) mandated a Human papillomavirus (HPV) vaccine school-entry policy for student's ages 11 to 12 years <sup>2</sup>
- This new requirement in PR presents an opportunity to study the implementation process across a 5 years period (2018-2023).
- This analysis is part from the Human Papillomavirus Policy Implementation Vaccination (HPV-PIVAc) study, an RO1 study funded by the National Cancer Institute that started on December 2018.
- Purpose of HPV-PIVAc:
  - Document barriers and facilitators of the school-entry policy implementation
  - Estimate the increase of HPV vaccination before and after the implementation
  - Understand the geographic variation of HPV vaccine policies across US states and territories.

## Study Objectives

Conduct key informant interviews to document factors that facilitate or impede a successful HPV vaccine school policy implementation in PR.

## Methods

- We conducted 38 key informant semi-structured interviews with stakeholders in the Department of Health (DOH), school system, healthcare organizations, community-based organizations and coalitions in PR (in favor and against the school-entry policy) from July 2018 to September 2019.
- Interviews were conducted face to face or over the phone.
- The interview's guide included relevant domains based on the Consolidated Framework for Implementation Research (CFIR) <sup>3</sup>
- CFIR has been used for identifying potential barriers and facilitators, and understand multiple contexts that may influence implementation <sup>4,5</sup>
- We transcribed interviews verbatim.
- Of the total interviews completed, we used 7 interviews to code using the CFIR domains. <sup>6</sup>
- Data was analyzed by two independent researchers using Atlas.ti
- Those 7 interviews were KI from schools (n=3), DOH (n=2), healthcare organizations (n=1), and CBOs (n=1).
- We documented barriers and facilitators for the implementation of this school-entry policy.

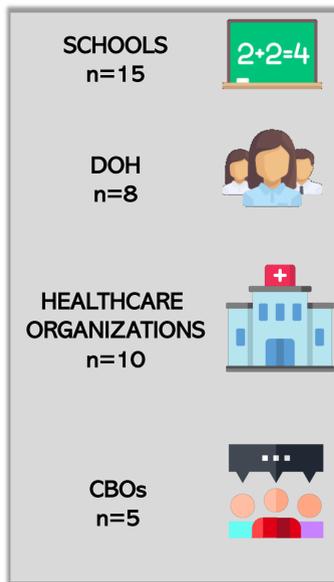


Fig 1: Key Informants recruitment by organization

## Results

### BARRIERS

Intervention characteristics	Outer setting	Inner Setting	Characteristics of Individuals	Process
<b>Complexity</b> ✓ Problems with doses completion ✓ Rigorous requirements perceived between public and private schools ✓ Lack of access to find the vaccine (private health insurances)	<b>Parent needs and resources</b> ✓ Lack of information of the school-entry policy and vaccine relevance  <b>Negative influence of social media</b> ✓ Myths, doubts, secondary effects	<b>Network and communications</b> ✓ Miscommunication between implementers (DOH and schools)  <b>Access to knowledge and information</b> ✓ School directors and teachers were detached from the implementation process  <b>Available resources</b> ✓ Lack of staff (school nurses)	<b>Knowledge and beliefs about the implementation</b> ✓ Ignorance about the policy, the vaccine and its benefits by some implementers	<b>Innovation participants</b> ✓ Parental detachment from policy

"This [the HPV school-entry policy] is in 'diapers', right, and we [the DOH] all know it because it was recently approved and as it is necessary to strength; I would say a little more the education campaign. We are in that process..."

Health educator from the DOH

"No, by the way, here the only thing that I received was the memo that the vaccine was mandatory, but [no one from the DOH] has come [here to inform about the school-entry policy]... That's why I tell you, the misinformation, I think, has been the problem with this vaccine..."

School director (private)

"No, [the] school staff did not [received any training], not even the directors who are the ones implementing the law ..."

School nurse

### FACILITATORS

Intervention characteristics	Outer setting	Inner Setting	Characteristics of Individuals	Process
<b>Cost</b> ✓ HPV vaccine is covered by health insurances  <b>Relative advantage</b> ✓ The power of the Secretary of Health to include vaccines required for school-entry ✓ Reach almost all target population	<b>Parent needs and resources</b> ✓ Vaccine availability regardless of their medical plan status	<b>Access to knowledge and information</b> ✓ Training and education from DOH and external agents to nurses (only)  <b>Leadership engagement</b> ✓ Compromise by nurses (from clinics and schools)	<b>Knowledge and beliefs about the vaccine</b> ✓ Enforce messages by school and health nurses	<b>Champions</b> ✓ Regional school nurses ✓ VOCES (vaccination coalition)  <b>External change agents</b> ✓ VOCES (vaccination coalition) in charge of giving capacity to school nurses

"Public sector, I understand that yes, the [HPV vaccine] is completely free, it covers from 0 to 18 years old..."

DOH program coordinator

I've achieved that people [parents] have done it [vaccinated their children]... "look mom, give him this vaccine, you are protecting him, you will not expose your child to a condition when you could have avoided it". And I have had [see parents change their position], but it has not been easy, then I tell them that is not so much because of the requirement, it is because they need to be protected

School nurse

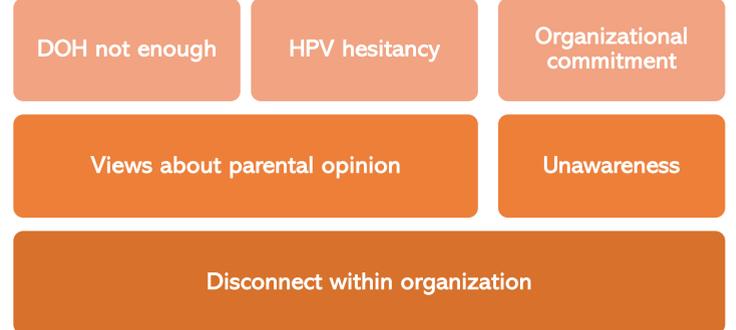


Fig. 2: CFIR additional codes

## Conclusions

- In this preliminary analysis, the barrier most mentioned by participants was the lack of clear information about the policy given to the community and the target population (parents).
- The facilitator most mentioned by key informants was the leadership engagement by nurses (from clinics and schools) to take the message to adolescents/parents and educate about the vaccine and its school-entry mandate.
- Several implementation barriers could affect the impact. Findings from this study can be used for improving policy procedures and implementation and to inform states/territories considering adopting similar immunization policies. Information generated will help determine adaptations/modifications that may be needed for policy implementation in PR and other populations in the future.

## Future Analysis

Expand the group of key informants to recruit policy makers, journalists and religious groups in favor and against the HPV vaccine implementation. We will also perform a rating analysis according to CFIR, to calculate the magnitude and valence, and the strength to quantify the quotes.

## Funding Source

1R01CA232743-01A1 from the National Institutes of Health. *Implementation of School-Entry Policies for Human Papillomavirus Vaccination on Schools.*

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